. LVIII · No. 6

Illinois U Library

NOVEMBER–DECEMBER, 1955

# ANIMAL KINGDOM

THE MAGAZINE OF THE NEW YORK ZOOLOGICAL SOCIETY

# NEW YORK ZOOLOGICAL SOCIETY

General Offices: 30 East 40th Street, New York 16, N. Y.


*PRESIDENT*
Fairfield Osborn

*VICE-PRESIDENTS*
Alfred Ely
Laurance S. Rockefeller
Donald T. Carlisle

*SECRETARY*
Harold J. O'Connell

*TREASURER*
David H. McAlpin

*ASSISTANT TREASURER*
Percy Chubb, 2nd

*EXECUTIVE COMMITTEE*
Laurance S. Rockefeller
*Chairman*
George F. Baker, Jr.
John Elliott
Alfred Ely
Robert G. Goelet
De Forest Grant
David H. McAlpin
Robert Moses
Harold J. O'Connell
Fairfield Osborn
Edwin S. Webster

*BOARD OF TRUSTEES*

*Class of 1956*
Archibald S. Alexander
A. Raymond Dochez
Robert G. Goelet
De Forest Grant
Eugene Holman
Warren Kinney
William De Forest Manice
Harold J. O'Connell
Landon K. Thorne
J. Watson Webb

*Class of 1957*
Robert E. Blum
Percy Chubb, 2nd
C. Suydam Cutting
Alfred Ely
Marshall Field
Childs Frick
Henry Clay Frick
Archer M. Huntington
David H. McAlpin
Richard C. Patterson, Jr.
John H. Phipps

*Class of 1958*
George F. Baker, Jr.
F. Trubee Davison
John Elliott
Robert I. Gannon
Peter Grimm
Fairfield Osborn
Eben Pyne
Laurance S. Rockefeller
John M. Schiff
Henry Sears
Edwin S. Webster, Jr.

*Ex-Officio,* The City of New York
*The Mayor,* Hon. Robert F. Wagner
*Commissioner of Parks,* Hon. Robert Moses


# STAFF: Zoological Park and Aquarium

John Tee-Van . . . . . *Director*
Leonard J. Goss . . . . . *Assistant Director*

*ZOOLOGICAL PARK*
Richard H. Manville . . . . . *Curator, Mammals*
Grace Davall . . *Assistant Curator, Mammals & Birds*
James A. Oliver . . . . . *Curator, Reptiles*
Leonard J. Goss . . . . . *Veterinarian*
Charles P. Gandal . . . . . *Assistant Veterinarian*
Gordon Cuyler . . . . . *Administrative Assistant*
Herbert J. Knobloch . . *Assistant Curator, Education*
Quentin Melling Schubert . . . . *Superintendent, Construction and Maintenance*
Edward Kearney . . . . *Manager, Facilities Dept.*

Lee S. Crandall . . . . *General Curator Emeritus*
William Beebe . . . . . *Honorary Curator, Birds*

*AQUARIUM*
Christopher W. Coates . . . . *Curator & Aquarist*
James W. Atz . . . . . *Assistant Curator*
Ross F. Nigrelli . . . . . *Pathologist*
Myron Gordon . . . . . *Geneticist*
C. M. Breder, Jr. . *Research Associate in Ichthyology*
Harry A. Charipper . . *Research Associate in Histology*
Homer W. Smith . . *Research Associate in Physiology*

*GENERAL*
Herbert F. Schiemann . . . . . *Comptroller*
William Bridges . . . *Editor & Curator, Publications*
Dorothy Reville . . . . . *Editorial Assistant*
Sam Dunton . . . . . *Photographer*
Henry M. Lester . . . . *Photographic Consultant*

*DEPARTMENT OF TROPICAL RESEARCH*
William Beebe . . . . . *Director Emeritus*
Jocelyn Crane . . . . . *Assistant Director*
Henry Fleming . . . . . *Entomologist*
Rosemary Kenedy . . . . . *Research Assistant*

*Associates*
William K. Gregory
John Tee-Van

*SCIENTIFIC ADVISORY COUNCIL*
A. Raymond Dochez
Alfred E. Emerson
W. A. Hagan
Caryl P. Haskins
K. S. Lashley
John S. Nicholas

*AFFILIATES*
C. R. Carpenter, *Co-ordinator*
*Animal Behavior Research Programs*
L. Floyd Clarke, *Curator*
*Jackson Hole Biological Research Station*

*CONSERVATION FOUNDATION*
Stephen W. Bergen
George E. Brewer, Jr.
Donald T. Carlisle
John C. Gibbs
Samuel H. Ordway, Jr.
Hugh J. Ross
Robert G. Snider
Peter M. Stern

# ANIMAL KINGDOM

**Bulletin of the New York Zoological Society**


## In This Issue


**Bengal Tiger: "Rajpur"** *Sam Dunton* **Cover**

**The Lowland Gorilla** *Lucien Blancou* **162**

**Where Do Animals Go in Winter-time?** *William J. Hamilton, Jr.* **170**

**In the Bag with Andy** *Sam Dunton* **176**

**New Arrivals and News** *Sam Dunton* **179**

**Zoo-goer in Asia** *William Beebe* **182**

**News from the Conservation Foundation 187**

**'56 Will Be a Great Year 188**

**Behind the Scenes 189**

**Index to Volume LVIII 190**



**Vol. LVIII** DECEMBER 1955 **No. 6**

Issued bi-monthly at the Offices of the New York Zoological Society, 30 East Fortieth Street, New York 16, N. Y. Editorial and Subscription Offices, Zoological Park, Bronx Park, New York 60, N. Y. Title registered with United States Patent Office • Subscription, $3.50 a year; single copy, 60 cents. Same rates for all foreign countries and Canada. All pictures not otherwise credited are from the photographic collection of the New York Zoological Society.


# Livingroom for Animals

IT IS OFTEN DIFFICULT to determine what is of lasting importance. In our world today, when the numbers of D.P.s and homeless people are legion, why, for instance, should we concern ourselves with the survival of wild animals, some of which, at this very time, are being crowded off the face of the earth? It may sound heartless or even ironical to say that wild animals are precious because once gone they are gone forever, while, on the other hand, people are becoming so numerous that maybe there are too many of them – not merely for the good of wild animals but for the good of people themselves!

These brief observations, however, are not concerned with the world population problem as such but with its effect upon a considerable number of different kinds of mammals and birds that are nearing the point of extinction. In our own country their situation is not too serious as yet, because of protected areas in National and State Parks, wildlife refuges and the few, very few, remaining wilderness areas. However, the pressure against these regions is constantly increasing, as we all know. Within another twenty years, with the prospect of another 40 or 50 million people in our country, the crisis for many forms of wildlife will really occur. This crisis is already evident in other parts of the world – for instance in the Far East where some species of superb animals seem doomed unless heroic actions are taken on their behalf. Likewise the crisis is threatening now even in Africa, in that vast yet shrinking home of many of the world's greatest mammals.

*Home* for people gives a promise of refuge and contentment. *Home* – meaning natural environment – for animals is a matter of life or death. Bullets may or may not, depending on man's mercy, spell the end of rare animals. But if wild animals are deprived of their *home,* their own "living room," they surely will perish.

Does man really wish to survive on an earth devoid of nature's rich company of living things? We must believe the answer is "No" – man does not wish to live alone.

Our Society, for its part, is bound by both its original charter and its present conviction to fight ceaselessly for the cause of wildlife protection.

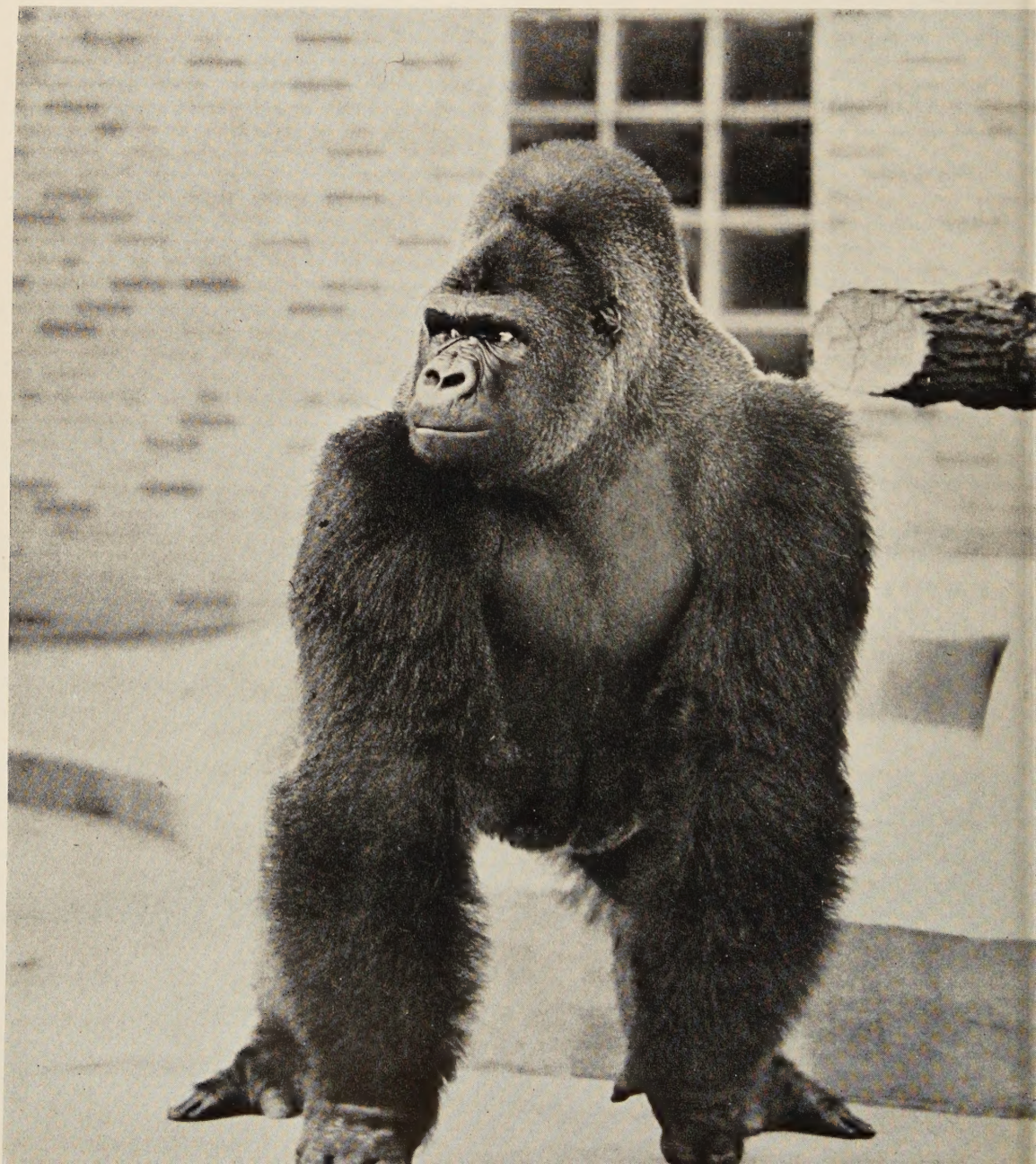
Fairfield Osborn

# The Lowland Gorilla

By LUCIEN BLANCOU

*Chief Game Inspector for France Overseas*

Translated from the French by Lawrence G. Blochman



DESPITE THE GREAT LACK of detailed knowledge concerning the private and communal life of the gorilla at home, there has been a considerable amount of inexact material written on the subject.

Our scanty and erroneous information may be blamed on the small number of expeditions devoted to the study of the habits of these anthropoids and even more upon the difficulties of observation in their almost inpenetrable habitat. Nevertheless, the series of expeditions in recent years, particularly since 1948, which have resulted in the capture of live gorillas even though that was not their exclusive purpose, have brought us new and precise data.

One bit of widely-circulated information about the gorilla which happens to be fact is that he travels in bands, or, more exactly, in families. These groups may number from three individuals to thirty-odd. Although it is often very difficult, if not impossible, to get an exact count on these groups, I am personally convinced that the figure thirty is rather common, at least in certain regions and at certain seasons.

It is to be noted, in fact, that near the Atlantic Coast in the west of Africa the families are much rarer, much more dispersed, and much less numerous than in mid-continent near the Equator and particularly north of the Equator. Along the coast of Gaboon and further south in the Mayombe mountain ranges, the family cell seems to dominate: father, mother, and one or two offspring. We might legitimately attribute the small number in this group to the encroachment of man, but it cannot be the only reason, for it would seem that the situation was the same a hundred years ago when the celebrated Paul du Chaillu explored this same coast. And if the human population may then have been more dense in certain regions, there were not yet the timber and mining operations that we know today.

***A male Lowland Gorilla is a massive and imposing animal. This is "Makoko," formerly in our collection. He weighed 448 lbs. before his death in 1951.***

What is the composition of the gorilla family group? Except for the simplest example, a couple and one offspring, there seems to be wide variation that follows no rule. Here are a few precise examples: In February, 1951, between the Equator and the 1st parallel, South Latitude, in the Middle French Congo not far from the Gaboon frontier, a gorilla group surrounded for capture between the stations of Ewo and Kellé, was composed as follows: one large male 5 feet 3¾ inches tall (measuring from top of the head to the heels), 7 feet 11½ inches arm-spread, 4 feet 10¾ inches chest circumference, about 400 pounds estimated weight; six females of different ages but all adult; and eight young ones – four males, two females, and two of undetermined sex.

In August, 1952, another group surrounded in the same area was comprised of one large male, four females, one young male of about five, and three other young ones of a year or less. A few days later, at some distance from this drive, another group yielded a male leader, seven females and only three young ones.

On the other hand, two groups encircled successively in August, 1951, included at least two males in each, one stronger than the other.

And finally, in January, 1953, during the filming of a motion picture called *Mogambo,* a family of ten animals kept captive inside a wire-mesh enclosure for eight days, was composed of two adult males (one of them old and almost toothless), one semi-adult male, four adults presumed to be females, three young males, but no sucklings. It is quite possible that some members became separated from this group during the encircling operation, for its composition does not seem to be quite normal.

It would doubtless be premature to draw conclusions from such a small number of examples. Certain positive facts do stand out, however. First of all it would seem difficult to maintain that the gorilla is not polygamous, at least when he has the opportunity. We can further state that there

***Young gorillas and females are adept at climbing trees and they move from branch to branch somewhat clumsily but with considerable speed. Adult males stay on the ground.***

*Drawing by the author*

exists a curious preponderance of males among the young, a fact confirmed by other capture expeditions, the cause of which is not apparent.

We thus have the right to suppose that, at least in the region under survey, the big males collect the most females possible for their harems, without, however, excluding from the group the presence of a lesser male whose rôle has not yet been determined. It is always the *Makassi* — the chief, in the Mbéti dialect — who takes the initiative in a fight, in case the gorilla group is attacked. And yet it was clear in the *Mogambo* group that the authority of the venerable chief, who was getting on, was beginning to be challenged by another adult male. The resulting perturbation in the group may explain the absence of nurslings, although it is true that nothing proves that the females released after the filming were not pregnant.

And now what is the basis for the existence of these gorilla bands in their habitat?

We may say in all certainty that the primary consideration is the search for food. Diet varies in quantity and quality according to the season and the place. The anthropoids are thus obliged to lead a life of perpetual wandering, although probably within a limited radius and to a degree varying with local conditions.

I had no opportunity to learn anything new about fights between males over the question of sexual domination of each troop. In the *Mogambo* group, the manner in which the old male fulfilled his rôle of chief was the object of special observation. It was he who rationed the food for the members of his tribe and who peeled the

pineapples and bananas supplied by the motion picture people before meting them out to his subjects. The natural resources inside the enclosure — young shoots, wild fruits, and roots — would have been quickly exhausted had not the film people brought in shipments of bananas and wild pineapples to distribute to their animal guests. The wild pineapples grew in profusion in the forests of the region and they were greatly favored by the gorillas, who preferred them to the bananas.

Among the other elements of diet noted here and elsewhere, those most sought after include various species of *Aframomum* or amomum (giant herbs) which are equally abundant in the rain forest and which possess active parasiticidal qualities. Young gorillas eat these avidly in captivity on certain days, refuse them stubbornly on others, for no known reason. Other wild plants are equally prized by the gorillas and are well known to the natives, but I cannot give the exact name of any except the parasol tree, *Musanga smithii*.

Observations on the possible meat-eating habits of the gorilla have been largely negative. Efforts were made in the Brazzaville Zoological Gardens to tempt young gorillas with freshly-killed birds. The birds met with total disdain each time they were offered. On the other hand I have the testimony of one European who, with several companions, reported having once seen a big gorilla sitting alone at the foot of a waterfall on the lower reaches of the Kwilu-Niari River, fishing with his hands.

It seems to be fairly well established that the gorilla is a diurnal animal that roves the forests by night only rarely at full moon — and even then he prefers an African's plantation to the forest. As a rule the gorilla awakens late and never starts

***A "Makassi," or old male gorilla, bedded down before sunset with his arms around two young gorillas. The buttress roots of a tree are a favorite sleeping place at night.***

*Drawing by the author*

his day very early. Once on the march, however, he races his rivals through the bush for his daily rations.

The nurslings are most often carried clinging to the back or neck of the mother. I have seen one report of a pair of twins so transported, but this does not seem to be a frequent phenomenon. I have personally seen a suckling clinging to the breast of his mother.

The male chief usually patrols the rear of his band for protection against attack, a practice which hinders the operations of trackers assigned to follow the gorillas until evening. In some cases the trackers have found the patriarch-sentinel in such bad humor that they have given up and beat a retreat.

About five in the afternoon, sometimes earlier (just as the hour of awakening ranges from six to seven in the morning), the gorilla band begins to look for a place to rest for the night. On this point, I have been unable to discover anything new in regard to the so-called "gorilla nests." However, I am convinced that those built on the ground are most rudimentary affairs – branches and leaves broken and beaten down at the foot of a tree or in the hollow or a thicket – just a place for a gorilla to sit or lie down, more or less supported by a tree-trunk or branches. In the *Mogambo* enclosure, the *Makassi* was observed thus several times, leaning against a tree in the evening, his arms around two young gorillas, one on each side of his imposing person. The whole group went to sleep thus, even before complete darkness. But there are also nests in the trees which perhaps do not serve exactly the same purpose. Adult males have nothing to do with them, since their weight and their impressive pot-bellies militate against their climbing trees. But the females, weighing as much as 160 pounds, climb well and high. They concoct all sorts of hammocks for themselves and their young.

I can vouch for the fact that on August 17, 1950, in the Kellé region during part of the afternoon, one of them built a "nest" of this sort merely by bending and breaking branches, just enough to hide completely her offspring of about one year. I myself watched the little fellow, stretching his arm above his hidden body, trying to touch the branch overhead, or, half-sitting up, leaning nonchalantly against it. My eldest daughter, as well as Robert Reboussin, the animal painter, watched the building of this nest, and Reboussin devoted several canvases to the process. The operation was accomplished in a big tree, about 65 feet tall, in the middle of a clearing and in full view of the white and black hunters who formed a circle about the capture nets. Neither mother nor child seemed to pay the slightest attention to the spectators.

I think that I should point out here that despite many sincere statements to the contrary, a gorilla will not hesitate to climb trees to escape an enemy, particularly man. He will even run from branch to branch, clumsily, it is true, but with sufficient skill to escape from the encircling nets. The natives know this well, so well that their first precaution, after having closed the circle, is to cut down all neighboring trees which might serve as escape routes.

This is also the time, I believe, to insist upon the rather surly character of gorillas in general. Disputes are common within the group, although less so than among baboons I have known. The cry of the gorilla is rather temperate, as compared to that of the chimpanzee, but he is subject to sudden rages and he is perfectly aware when anyone is afraid of him, even when very young.

This brings us to an examination of the relations between the gorillas and the natives of western Africa. They can practically be summed up in one word: Fear! The fear is mutual and hereditary.

The constant quest for food, which is the basis of a gorilla's whole life, brings him into perpetual contact with human groups, at least in the inland equatorial regions – despite what may have been written to the contrary. These contacts first of all result in damage to man's husbandry. The damage may be of many kinds, but it is most destructive in the banana plantations. The anthropoids prefer the inside of the banana stalks to the fruit itself, just as they tear apart the sugar cane to get at the center. They also have an inordinate appetite for the oil palm and the cassava.

Conflict between gorillas and natives may thus result. The big males are audacious and ready to defend their females, while the mothers never seem to hesitate about running to the rescue when an offspring calls for help. In general, however,

it is the males who bring on the most violent clashes. I do not mean that the gorillas are always the aggressors. Quite the contrary. The proof that the aggressive gorilla is the exception lies in the fact that before official protection was accorded, hunters often had a hard time finding him. Not only the difficulties of the terrain came to the gorilla's aid, but his own skill in hiding from the human presence. It is nevertheless certain that in a country as heavily wooded as the gorilla's habitat, and in districts swarming with the big anthropoids, surprise encounters are inevitable. In such cases the gorilla, like many other animals when surprised at close range, will sometimes attack as his best defense, particularly when he is afraid of what he assumes to be an enemy. He rarely makes a sustained attack. A rapid charge accompanied by fierce gestures, more or less fierce growls, a bite or a more-or-less energetic blow — all this is followed immediately by a precipitous retreat.

In a general way it is easy to understand why in spite of everything the aborigines, particularly the women, greatly fear these animals with human faces which they are likely to meet at any hour of the day around the turn of a path or in the tangle of an old plantation. The inverse must be equally true. But the gorillas have few advocates to defend them.

So while we find few complaints about gorillas in regions where they live only in small families, wherever they rove the countryside in large bands the outcry against them is long, loud and, as is to be expected, often exaggerated or made up out of whole cloth. The best way to judge the extent of the exaggeration, as in the case of damage by elephants, is to go hunting for live gorillas. The hunter is quick to perceive that these animals supposedly encountered everywhere all year round become extremely difficult to find. The season of the year and the quarter of the moon, the condition of the vegetation and the period since the last drive, all are factors that hinder the hunter and add to the scarcity of the hunted. Some very extensive zones are even frankly labeled as completely devoid of gorillas except for a very few vagabond males.

But whenever the time and terrain are favorable and a gorilla group is sighted — even before — the African hunters begin their elaborate routine: rites of magic, feverish preparations, a warlike atmosphere. The natives emphasize the word "war," for the gorillas are no longer merely somewhat humanized apes; they are practically a human tribe of hereditary enemies.

The question has often been asked as to how numerous the gorillas actually are in western Africa. Since no true census has ever been taken and probably never will be, the question can only be answered with an estimate without palpable proof. Although such estimates are surely made in good faith, it seems to be the rule that they must vary in startling proportions. For instance, I recently read in a French book devoted entirely to the anthropoids, that a doctor who had served in western Africa reported the number of gorillas in the region at 200! On the other hand, during the Bukavu conference in 1953 the figure was given as more than 50,000 for the territories of Gaboon and the Middle Congo alone.

I am obliged to say that such affirmations are merely impressions and rest upon no solid basis. We cannot even be sure that those who make them have seen many gorillas in their home surroundings or have traveled extensively through their habitat. In the most favorable cases, the "experts" risk jumping to a conclusion that the gorilla is approaching extinction because they have seen neither live specimens nor their tracks (without even wondering if their absence may not be due to some local or temporary cause), or they indulge in fantastic operations of multiplication. Because one particularly propitious sector of forest really teems with gorillas, concentrated there because of the dry season, the "experts" will deduce that the *unknown* total of gorillas in the entire rain forest will be the number they have counted multiplied by the more-or-less *known* number of square kilometers comprising the area of the whole forest. In either case, the error is certain and considerable.

I am by no means an expert on gorillas. But in estimating their approximate population, I have kept in mind the risk of error presented by the preceding methods, as well as my own experiences of twenty years of travel through Ubangi-Shari, particularly the northeast of the territory, before coming to Gaboon and the Middle Congo. I have thus been able to form my opinions as to the number of elephants, buffaloes, Derby elands,

**These gorilla hunters are employed by the government of the Belgian Congo to get young animals. They close in on a gorilla group in the forest.**

*H. Goldstein-Congopresse Photos*

lions, etc., in the Ubangi territory and in certain of its Reserves, studied sector by sector for greater precision. I have compared these opinions with those of the very rare whites who are competent in these matters. In this regard, it is unfortunate that there are as yet no Africans who could give a trustworthy answer to our question. I have extended this same method of probabilities, constantly checked and rechecked, to the gorilla, and it is my considered opinion that the gorilla population of Gaboon and the Middle Congo is at least 10,000 and no more than 20,000, with the actual figure coming closer to 10,000. My friend Charles Kieffer, Chief Game Inspector for the French Cameroons, in his *Le Grand Livre de la Faune Africaine et de sa Chasse* (1954), estimates the minimum number of gorillas in the forested zone of the French South Cameroons at 5,000 to 6,000. This figure is quite in accord with my own, for although the rain forest of the Cameroons is smaller in area than that of Gaboon and the Middle Congo, the density of its gorilla population seems to be much greater.

Is the gorilla population growing or declining? In my opinion, it is definitely on the wane, but not alarmingly so. The best-qualified hunter-naturalists such as my friend A. R. MacLatchy, Secretary-general and Chief Administrative Officer for the Territory of Gaboon, where he has spent twenty-eight years of his life, does not believe the gorilla was overhunted before its protection by law in 1932. I agree with him. But since that time new threats have arisen in the form of deforestation in the wake of timber and mining exploitation. Firearms are more numerous and the demand for young gorillas, even the skulls of adults, has also increased. What is more, for lack of enforcement machinery, protection actually exists on paper only. One of the gravest dangers is certainly the increasing number of capture drives organized either by professionals with few scruples as to method or by incompetent amateurs who "collect" the young. And slaughter

by natives left to themselves must increase in direct proportion to the availability of firearms (percussion-guns as well as modern smooth-bores). But I nevertheless still cannot accept the figure, presented at Bukavu, of a thousand-odd gorillas killed annually in the Middle Congo and Gaboon. Deaths are certainly less than half this.

I should point out, however, that there have been cases — fortunately not very common — of certain mining or forestry interests which, finding their meat in short supply, have not hesitated to send out their African hunters with orders to shoot gorillas to feed the labor force. Luckily, gorilla meat is not relished by many Africans. Far from it.

But even so, the gorilla needs all the luck he can get, for the state of his health, even in his natural habitat, is not always of the best. Captured animals, the adults at least, too frequently show morbid signs of skin and other diseases, internal parasites, accidents and battle-scars.

I think that the gorilla species, losing a little more of its habitat every year, always "at war" with mankind, annually gives ground slightly. It is therefore desirable that the international protection offered the animal be reinforced rather than weakened.

Having thus frankly set forth my opinion on this point, it is easy to understand why I can never approve the decision taken by the International Conference of Bukavu (Belgian Congo) in October, 1953, transferring the Lowland Gorilla from Category A (completely protected by the International Convention of London, 1933), to Category B (partly protected).

Because of the situation outlined earlier, it is no doubt inevitable that some gorillas be destroyed each year as undesirables, more because of their damage to agriculture than their attacks against men. And it is normal that these reduction measures be confided to competent men such as those of the Game Service. But in view of the underdevelopment of this Service as well as the problems of transport over long distances, a delegation of powers is perfectly conceivable. Under strictest control, amateurs paying a very high fee for a hunting license could be invited by local authorities to remove a specimen of gorilla that

has become dangerous. As these individuals are almost always solitary old animals camping on the fringes of some village, the species would be none the worse for their loss. But this set-up could function while leaving the Lowland Gorilla in Class A. It is a simple matter of organization.

Except for the ill-informed or fanatics on the subject of game protection, nobody during the last thirty years has seen fit to protest the slaughter of thousands of female elephants and their calves in defense of the crops of Uganda, Kenya or Tanganyika (Rhodesia is a different matter). And yet these elephants have also been specifically protected by Class A for twenty years as "bearers of tusks weighing less than 5 kilos." The *legitimate* interests of mankind must always take priority over those of animals. In the case of gorillas, there would doubtless be occasional removals by sportsmen rather than officials of the Game Service. There is a danger here, true, but no more than a few dozen specimens annually would be involved. The high fees for hunting licenses, the difficulties of the terrain and the presence of legal control should be sufficient to discourage the influx of amateurs in force.

On the other hand, if the gorilla is ever settled for good in Class B, he risks becoming fair game like the elephant and the Derby eland, less carefully watched over, exposed to greater dangers, particularly in the matter of capture and sale of the young. Everyone who knows the country I am discussing can imagine what manipulations and traffic would spring up. That is why I think the Bukavu decision was inopportune, even from a simple psychological point of view.

But to end on an optimistic note, I believe that in spite of everything, the gorilla is too well known and too much in the international eye for the species not to be able to look forward to many more long years of existence, shielded by the greatest protection of all, by a natural safeguard that favors him above other animals — a habitat particularly propitious to his conservation.

***Low nets more or less completely encircle the group to ensnare any gorilla attempting to charge.***

***This little Mountain Gorilla ran into the net.***

# *Where* Do Animals Go in Winter-time?

By WILLIAM J. HAMILTON, JR.
*Professor of Zoology, Cornell University*

THE GRAY December day gives little evidence of life. Bare maples, their limbs mantled in snow, rise above a white blanket that softens the earth's contour. Yet a few months ago, animal life was everywhere. Each field had its fat Woodchuck intent on a repast of clover or apple drops. The great brown Monarch Butterfly, gliding over the aster-covered fields, gave promise of long warm days ahead. Muddy banks of drying ponds were lined with shorebirds feeding voraciously on the myriad small fry that swarmed in the shallow water. Night brought the bats in dexterous flight to devour the insect swarms, while underfoot toads fattened on noisy crickets.

But seasons change. Cold October rains shake off the remaining leaves and beat the insects to their death. Skim ice soon fringes the woodland pools and stills the life within. Lowering temperatures chill the ground and lock the waterways. Winter is at hand, and the once-abundant life departs. Where has it gone? To be sure, a walk in the winter woods will reveal little troupes of Chickadees, Nuthatches and querulous Jays, while elfin tracks in the snow or subnivean tunnels proclaim that some mammals are still abroad, active but unseen. Life is muted, and one must search industriously to find even a few of the many scores of common species so abundant a few months earlier.

How do animals overcome this hostile period? Some, of course, do not; they are creatures of the summertime and their spans of life are short. But as for the others, if winter brings a scarcity of food, they must either migrate to areas where there is a dietary to their liking, or pass the winter in dormancy or the death-like stupor of hibernation.

Even in periods of deep snow some species are able to secure a sufficiency of food. The deer, fastidious in its feeding on its nightly forays, utilizes the browse that rises above the snow or nibbles the tips of twigs. Cottontails, too, peel the bark from low apple branches as the white drifts bring them within reach, or chisel off the wild blackberry canes, eating the sharp thorns

and all. Foxes stalk the rabbits, or dig out the field mice when late winter thaws expose their nests. In the forest floor tiny shrews thread through the leaf mold gleaning the dormant insects, spiders and pillbugs. Under the ice voracious pike are active, pursuing the smaller perch which in turn prey on the hapless minnows. High overhead the Porcupine gathers in the hemlock twigs and girdles away the resinous bark, immune to the subzero nights of January. Its thick coat and tough hide are sufficient protection from the most frigid weather. It may remain in a single tree for several days, eventually backing down and waddling through the snow to the rocky den that shelters others of its kind.

Other winter residents are more provident and have made a cache of food, as busy during the late summer as a farmwife with her jellies and jams. The Gray Squirrels of the Bronx Park, quite as interesting as any of the exhibition beasts, have patted down the fallen mast in the leaf litter and can resort to these delicacies when a diet of buds becomes tiresome. Chipmunks cram their cheek pouches to bursting, carrying seeds, beechnuts and corn to their underground labyrinths until a peck or more has been stored for winter use. The Beaver, locked in its Adirondack pond by a foot of ice, has wisely prepared for this bleak season. Stored in the deepest water of the pond, usually between the dam and the great lodge, is a pile of aspen or alder laboriously gathered during the fall nights. It leaves the lodge, gathers a branch from the cache and swims back to the dark recess, where it leisurely strips the bark with its great orange teeth.

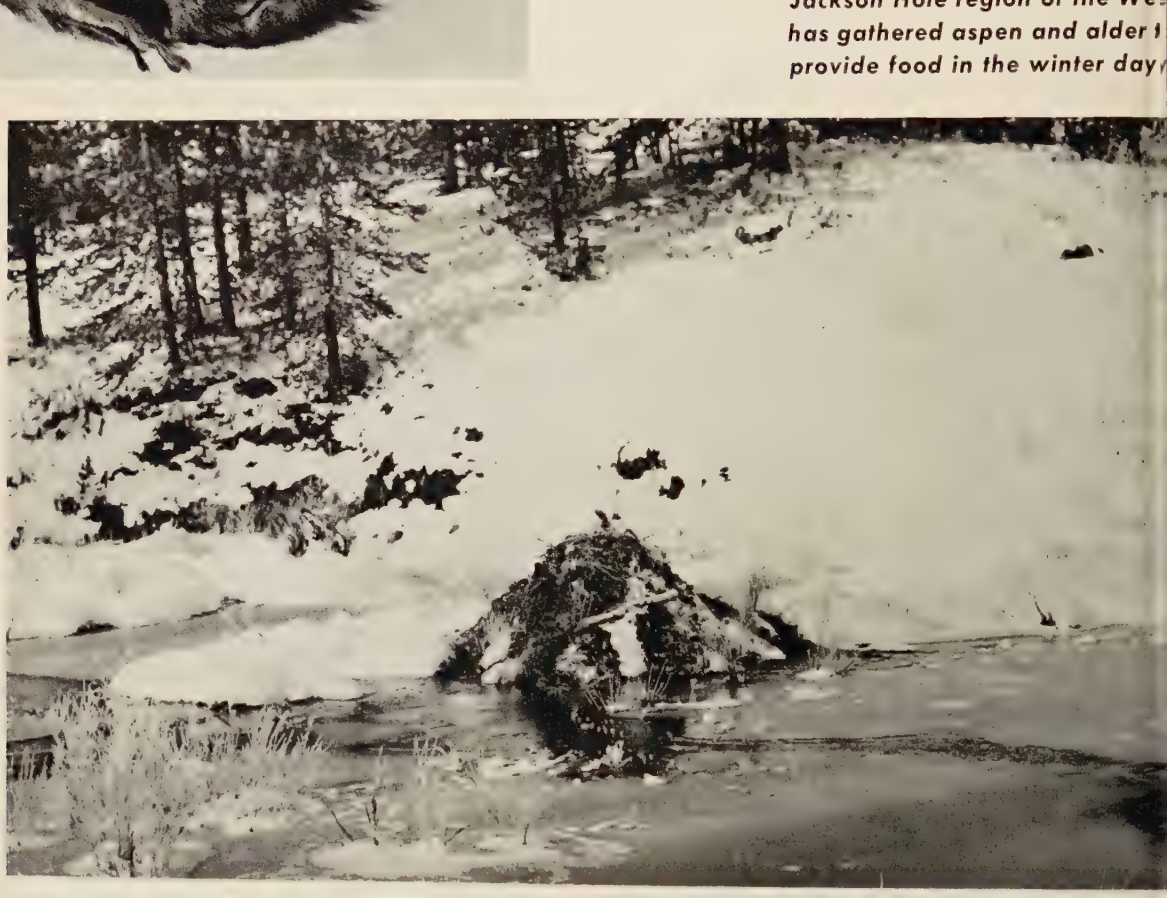
Many creatures, perhaps less adaptable, must flee the rigors of winter and settle in a more amenable climate where food is not wanting. No end of our common birds leave the northern states, often to journey many hundreds of miles, resorting in an area where food is not a problem. Some bats, notably the Red, Hoary and Silver-haired, make extended trips, a few actually reaching the hospitable shores of Bermuda. Less marked are the shorter migrations of the Leopard Frog, some salamanders and other amphibians, from the fields and woods to the ooze of the pond bottom or the rubble of brooks.

Not a few animals, including insects, molluscs and the vertebrates, overcome this rigorous period in a manner simple to them but so complex and difficult to understand by man. These animals endure the long winter by hibernating. Hibernation involves an inactive state in which

*Rolled into a ball of fur for its winter sleep, the Chipmunk nevertheless awakens at intervals to forage in the world of snow and ice above its den-site.*

*Photo by the author*

*Under the ice a beaver in th Jackson Hole region of the We has gathered aspen and alder t provide food in the winter day*



metabolism is greatly lowered, resulting in body temperatures a little higher than that of the surroundings. Many animals pass the winter in this profound "sleep," so marked that when handled they appear all but dead.

Consider the familiar Woodchuck. All through the summer and the early fall it has feasted well, adding to the thick layer of fat that swells its new coat. The chuck, be it an oldster or one of the growing young that have long since wandered from the natal den, is replete with the largess of the harvest season. The rains have brought new succulents to the fields and the groundhog should know the delight of banquets before cold weather sets in. Disregarding the somnolent days ahead, the fat fellow makes its way to a nearby hedgerow or bordering woodlot and there refurbishes a long-unused burrow. Dead grasses and leaves it carries to the subterranean chamber, and begins a slumber that will continue for months. When it awakens in mid-February or early March the marmot re-appears in a barren world. A snow-covered pasture or desolate fields offer a bleak welcome, for the

strengthening sun has yet to push the green sprouts above the frozen soil. Almost five months have passed since the marmot has seen the sky. But like so many of its relatives, the western ground squirrels and their kin, the chuck has been immune to the winter storms that howled above. Winds that blew white drifts into the burrow have only sealed the life within.

In its snug retreat, profound changes commence even as the fat creature slumbers into its long winter night. As air temperatures drop, the chuck responds, its own body heat lowering to only a few degrees above the temperature of its surroundings — around 50° F., perhaps. Circulation is so retarded that little pulse can be found, a few beats per minute creating enough circulation to sustain life. Respiration is scarcely marked and breathing is evident only to a patient watcher. Head thrust between hind limbs, black fists knotted beneath the breast, this furry ball is ensured of another daisy-spattered meadow by its ability to sleep while others perish. At long last the broken rivulets coursing the valley slopes proclaim the end of winter. The chuck appears above ground, its store of fat reduced but still sufficient to maintain it during the weeks of scarcity. The mating season is at hand and telltale tracks in the now dirty drifts give a clue to the Woodchuck's wanderings.

Our native jumping mice are also true hibernators. Although their food habits are similar to those of other small rodents which are active throughout the year, these long-tailed mice pocket themselves in a snug ball of dried leaves and grass by mid-October. A bunch of frozen fur scarcely the size of a golf ball, Zapus sleeps away half the year. Its huddled body, so rigid that it can be rolled across a table, appears quite without life, and Redwing Blackbirds will have settled in the northern marshes before this little fellow ventures forth again.

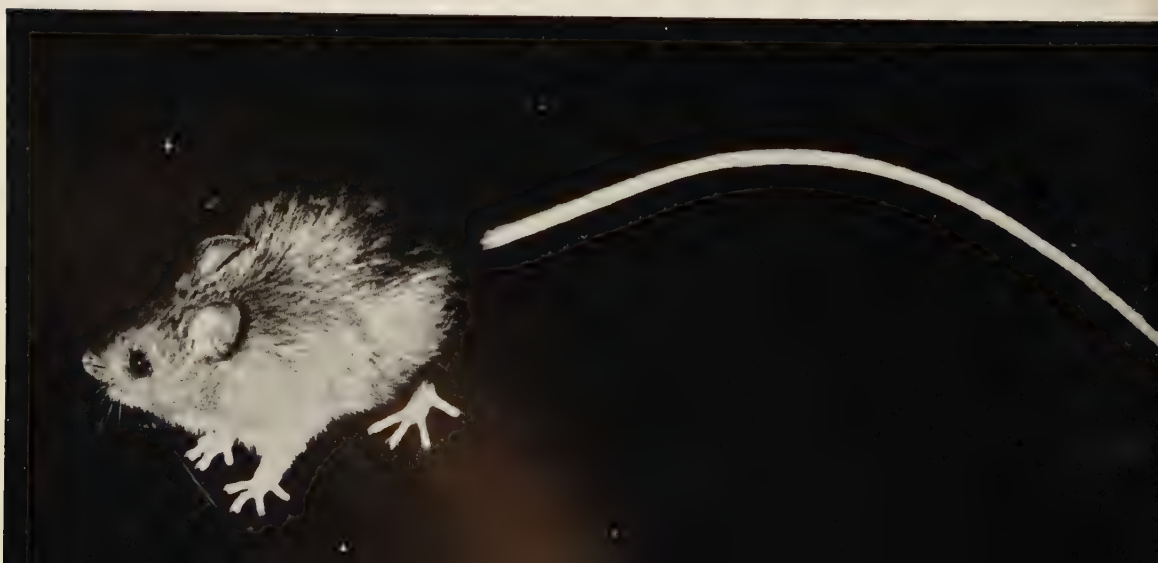
***When the snow is not too deep and the elk can reach a grove of aspen such as this, they peel the succulent bark from the tree-trunks. These trees have all been stripped by hungry elk.***

To visit the winter bat roosts, one must journey to the caves of the northeastern states. In these sanctuaries hundreds, often thousands, of bats cling to the limestone walls and ceilings. Temperatures in these winter quarters seldom drop below 45° F. In the smaller caves, often little more than fissures just large enough to permit one to squeeze through, the little Pipistrelle is likely to be bathed in the moisture of ever-present seepage and to appear like a beaded ball in the ray of a flashlight.

Hibernation is a misused term, frequently applied to any creature that becomes quiescent for varying periods during the winter months. It is well to differentiate between this major physiological change and the less profound one called dormancy. Dormant animals may become quiescent for several weeks or longer during the winter, yet appear to be in deep slumber. Witness the Black Bear. It may select an open swale or the scant cover provided by a few low spruce boughs. More often the she-bear chooses a great upturned root, scraping away a few bushels of dirt to conceal herself. Her pulse beats strongly and her breathing is scarcely less regular than on the August nights when she fed on grubs, fruits and other bounties of summer. The larger male that has fathered her unborn cubs is still roaming the ridges, uncovering the acorns and beechnuts scattered in the matting leaves. Skunks and Raccoons, rounded by the blanket of fat that helps sustain them in the frozen world of winter, slumber away in some burrow or rock fissure. They, like the bear, maintain a high temperature and are up and about in the milder spells. Following the open spring runs, the 'coon on January nights paws away the detritus, finding nightcrawlers and fat insect larvae in the sodden matrix of the rivulet.

Toads are quick to respond to the first heavy frosts. Bufo scrapes away the dirt with the horny trowels of its hind feet and backs into the earth, digging deeper and yet deeper as frost penetrates the upper levels. The hind limbs are drawn against the belly, the fore legs pressed against the bowed head and the eyes are tightly closed. Here it rests in its earthen cell for half the year. A warm April rain softens the soil and the males push out into the spring night, to make the succeeding days ring with their high-pitched, musical trill.

In the northern states our native snakes all hibernate. Usually they associate in some numbers with their own kind, although different species may occupy the same winter chamber. Large ant hills are attractive sites and aggregations of Garter, Red-bellied and Green Snakes totalling 257 individuals have been taken from one such mound. Thirty-five years ago a school companion and I journeyed into the Ramapo Mountains near Suffern, New York, to collect rattlesnakes for Dr. Ditmars's collection at the Bronx Zoo. We usually visited this area the first week in May and early October when the snakes, just leaving or entering their winter quarters, were grouped about the entrance to the rock fissures. Blacksnakes and Copperheads resorted



***Jumping Mice pass half the year in a state of lethargy, yet their diet is about the same as that of Deer Mice, which are active in winter.***

*Photo by the author*

***This well-woven nest of a Field Mouse has been exposed by February thaws. When this happens, the mouse must leave to find sanctuary somewhere else.***

*Photo by the author*

to the same den site, entering the stony outcrops with the rattlers. Even the great Diamond-back Rattlesnake of Florida retreats to a Gopher Turtle burrow as cool weather approaches, passing several months in this subterranean chamber.

Near my home in upstate New York a spring, enclosed by a cement wall, provided a source of study for several years. Fallen leaves and mud filled the bottom and a few inches of water covered the detritus. Each year a few Garter Snakes assemble here to pass the winter. At least some of them return to this site each year to find refuge in the warmer temperature of the spring. People who have a wellhouse or a deep spring will find much of interest in and around them during the winter months.

The teeming populations of western Ground Squirrels do not wait for cold weather before disappearing. When summer heat and dessicating winds pass over the green vegetation, lack of moisture — and other factors — impel the squirrels to leave the bright world above and burrow into the ground. They do not reappear until seven months later when the waning winter still locks the ground in frozen silence. Aestivation, as summer torpidity is called, is a condition which appears to have evolved as a means of escape from the shortage of the food brought on by drying of the vegetation. Here the aestival slumber and winter sleep merge imperceptibly.

One might suppose that the winter sleepers would come out thin and emaciated. Certainly some species lose weight during the long sleep, often as much as 40 per cent. of their initial weight, but since so many re-appear while cold weather still grips the land and food is at a premium, they must still depend on the hidden reservoir of fat to sustain them until new forage is available.

It is unfortunate that so many naturalists, amateur and professional alike, put away their field glasses and notebooks with the first snowfall, in a measure emulating some of the animals we have discussed. All too often field observation is not resumed until the first peepers proclaim the spring. Nevertheless, winter can be an enjoyable and profitable time of study for the naturalist. We yet know little of the ways of turtles, frogs and snakes during their long quiescent periods, and even less of many of the commonest small invertebrates that teem in the forest litter or ice-capped ponds. A full account of fish life in the deep retreats of ponds and lakes has yet to be written. Problems by the score remain to be investigated. Put aside, for a change, the bird glasses and the census-conscious study of avian life, and look underfoot for the dormancy of animal life under the crusted snow. I would even say: if you like this idea of serious winter study of natural history — if you think there are problems you could work out — drop me a card about them. I might be able to pass on some helpful suggestions, and I certainly would be interested in your results.

1. ANDY HEARD HIS KEEPER COMING.

2. KEEPER MICKY QUINN PRESENTED THE BAG.

3. THE GESTURE OF COVERING AND UNCOVERIN

# IN THE BAG WITH ANDY

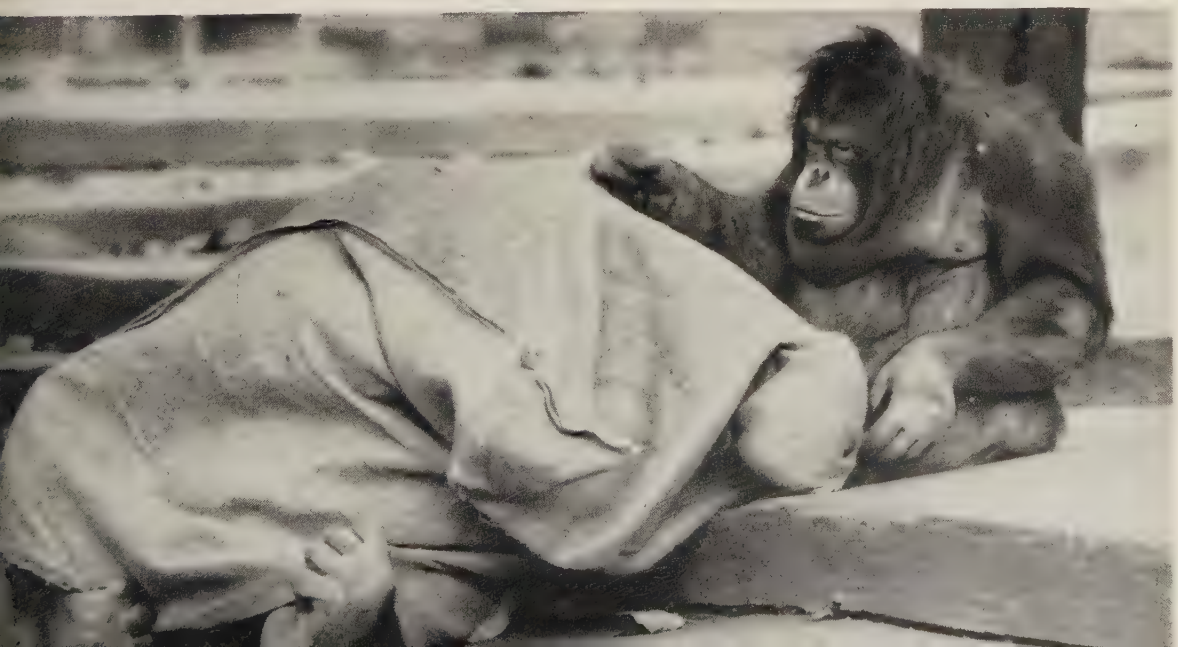
## PHOTOGRAPHS BY SAM DUNTON

The fierce possessiveness that some children have for a particular blanket or towel or bit of cloth is well known; they can comfort themselves endlessly with the soft, flexible object; they may even refuse to go to sleep unless they are permitted to have it with them. Other young primates – monkeys and the anthropoid apes – share this trait. Human children normally outgrow it; so, indeed, do young anthropoids, as far as emotional reliance on the object is concerned. But, unlike children, they may keep persistent interest in "childish" objects for many years – until they are, in fact, approaching middle age. Perhaps even longer. This long preamble is merely to say that **ANDY,** our usually lethargic **ORANG-UTAN,** is still addicted to play with a cotton bag. The pictures on these pages tell the story and comment is hardly needed, except to say that from his earliest days with us (Andy came to the Zoo in 1947, at the age of 18 months, the first post-war Orang-utan to come out of Borneo) he has delighted in pulling a bag over his head. Now, at the age of about 10 years, he still gets evident enjoyment out of it. His fun is somewhat complicated by the fact that a young female Orang-utan, **SANDRA,** shares his compartment in the Great Apes House. Sandra has never been a bag-addict; at any rate, Andy has never permitted her to play with one. The best toys and the best food invariably are preempted by Andy himself.

FOR MANY MINUTES.

4. HIS TOES PULLED THE BAG DOWN SNUGLY.

ANDRA HAD BEEN WATCHING FROM A DISTANCE; NOW SHE CAME TO INVESTIGATE.



6. SANDRA SAW A CHANCE TO GET IN A FEW GOOD LICKS.

7. AND PUNISHMENT FOLLOWED, SWIFT AND SURE.

# NEW ARRIVALS & NEWS

This picture shows a crucial moment in the life of young **JESSE,** our new **GRANT X CHAPMAN ZEBRA.** At the moment this photograph was made, Jesse was making up his mind whether it was safe to stroll out on our African Plains. For four weeks he had remained inside the corral, wandering to the gate occasionally and looking out but not venturing into the open. This morning he looked – took a few steps forward – and the adventuresome deed was done. Nothing jumped at him; nothing frightened him. New York, after all, proved to be just another place where the food is good and plentiful. Today, a month later, Jesse is perfectly at home on the Plains.

For all their impressive bulk and the sturdiness of their horns, **GAYALS** from the hill districts of northeastern India are steady, dependable, all-but-domestic animals. They have a strong "family feeling" and our old bull, the sire of this frolicsome calf, is generally tolerant of his offspring and sometimes even playful with it. This youngster was born on October 22 and is the latest in a succession of calves we have had from our breeding pair. Calves are often distinctly reddish at birth but their coat gradually darkens to the glossy brownish-black of the adult. This particular calf is a male and its coat is grayish.

For four years in succession we have had a baby **GUINEA BABOON** from a pair in our Primate collection, and the female and her offspring of 1955, 1954 and 1953 are on view here – the latter two at least partially on view. They were full of curiosity about the photographer, but are still young enough to be timid and want to hide behind their mother. The 1952 youngster has been removed from the family temporarily for special diet in our Animal Hospital. Breeding pairs of Guinea Baboons are not common in zoological collections.

This is how you decorate a **KOMODO MONITOR'S** compartment. We learned how this summer when it became necessary to replace the natural vines in the back of the monitor room with artificial sprays. William Allen of our Maintenance Department undertook the simple job of tacking the sprays in place, but it took the constant and often combined efforts of Curator Oliver and Headkeeper Spencook to keep the male monitor from trying to climb up Mr. Allen's back. The reptile has never made an attempt to bite, although a few times it has lashed out with its heavy tail when annoyed. The climbing which it likes to do, while not meant aggressively, is dangerous on account of the sharp claws on the fore and hind feet. The monitor never gave up trying while Mr. Allen worked. The female just slept.

# Zoo-goer in Asia

By WILLIAM BEEBE

SINGAPORE ITSELF has no proper Zoological Park, but the simian population of the Botanical Gardens more than compensates. On July seventh, 1955, I left the car at the gate of the Singapore Botanical Garden and started up Palm Valley. Two dead leaves drifted down upon me, followed by a monkey which landed lightly almost upon my shoe. He backed a yard away, sat down, and began to eat grass, paying not the slightest attention to me. Within a minute he was followed by fourteen more primates, including two large males and eight females with babies clinging to their fur.

As in many another situation, I considered the present tableau which had crystallized without warning, and realized I could qualify as a Coward, First Class. In past years I have been threatened by gangs of baboons, and I did not care for the nonchalant proximity of those two dozen understudies.

I instinctively took out a small notebook and at once became the center of interest. From the fixity of attention of the fifteen pairs of mean little eyes on the white paper, I gained confidence, and realized that they were only waiting for a handout. The scene changed and I saw myself in the Bronx Zoo, with a bag of cracker-jack, surrounded by fifteen gray squirrels. I heaved a sigh of relief and broke the circle. I have had many experiences in a Zoo, but this was tops.

Ten feet away a mother monkey leaped for a low-hung fruit and accidentally stepped on her offspring, which let out a screech. Instantly the biggest male looked at me and bared his dog-teeth. The potentiality of danger was there, as I later heard from an English woman. Her fox terrier slipped his leash in the Gardens, and seized a baby Macaque. In a moment he was attacked by the whole band and killed.

One half-grown monkey had only the stump of a tail, giving him a superficial resemblance to his big jungle brother, the Pig-tailed Macaque. My sympathy was short-lived, for I remembered the non-prehensileness of this organ. When four monkeys were seated on a branch, rear-on, close together they recalled Kipling's slogan of the Banderlog, "Brother, thy tail hangs down behind!" Kangaroo-like, the tail serves as a prop when they occasionally stand upright to peel a fruit.

Another day I joined a little Chinese bride and her husband, and we fed a band of forty-seven. In the center of the road they formed a semi-circle, younger ones in front. The little hands would reach out and snatch the nuts, whereupon it was a question whether they could chew and swallow before their parents reached them, to scoop their cheek pouches clean, leaving their infuriated infants to go back and try to snatch another morsel. This recalls the habit of our South American cebus mothers, in paying out their offspring by their tails, enabling them to pluck berries from slender twigs which would not bear the weight of their parents.

The present Director of the Gardens, Dr. Purseglove, detests the monkeys as much as the visitors adore them. They have never been caged but have worked their way into the grounds in the past from out-lying woods. It is exceedingly difficult to keep them down to reasonable numbers for at the sight of a gun all vanish, and they usually hold their food in their cheek pouches, which gives them opportunity to detect poison before swallowing it. They do much damage to the animal life and the most valuable plants such as orchids must be guarded by electrified wire fences.

One of the first monkeys to touch the fence was an old male who snatched his hand away at the shock. Then, in a towering rage, he turned and went for his fellow monkeys, apparently

***Dr. Beebe found that Singapore's macaques have much in common with New York's Gray Squirrels; both enjoy begging from visitors. But macaques have very uncertain tempers.***

blaming them for the new and unpleasant experience. In most cases a single shock was sufficient to keep them away.

On the last day of our stay Miss Crane and I went to the Gardens for photographs, and heard that three of the largest and most aggressive males had been shot two days before. Instead of being wary, the bands were tamer than ever. The full-grown males had always been the least friendly and now that their warning barks were no longer heard, the rank and file accepted handouts of chocolates and peanuts with utmost abandon. For example, a large female with her infant at her breast, climbed into my lap with the young monkey between us. The baby's eyes were closed, its fists tightly clenched, and it squalled loudly. At the same time the mother seized a chocolate with her free hand and leaped to the ground, slapping her offspring back into place.

It is the large Pig-tailed Macaque which is used to pick coconuts. Now and then a bicyclist can be seen with one of these monkeys riding in the provision basket. He is en route to some village to which he will rent self and monkey. The animal ascends on a long leash and twists the nut until the stem breaks. Curiously enough, he does not use both hands or both feet at the same time, but those on one side, right or left, holding tightly with the opposite hand and foot. He is most expert in returning along the line and freeing it from obstacles, but, lacking a prehensile tail, he cannot hold the leash aloft and free, as do our Chiris in Trinidad.

The nearest zoo to Singapore was that of the Sultan of Johore, which was just this side of a "black" zone of terrorist activity. We went north along the main highway of the island, across the famous causeway and on to the old palace and park. Here we found a large wire enclosure with fruit pigeons, gallinules, three ducks and a pair of Argus Pheasants in the underbrush.

Not far away we found the Sultan's proper zoo, to enter which we paid one dollar and a quarter,

about forty cents American. On a hillside was an irregular jumble of cages with great stone walls, fronted with needlessly stout bars or close-meshed wire. The fences were composed of metal sections of air-field runways, punctured with a multitude of round holes. A pleasant Malay keeper showed us around and offered to let us go into the cage with two nearly grown tigers. He said they were born in the zoo and were usually tame. We politely refused.

A three months' old Honey Bear had an orange throat ring and as I held him he sang as he sucked his paws, exactly as did the Bornean bear "Kapit" which I sent to the Bronx Zoo almost a half century ago. A nearly grown Orang from Sumatra was hastily encumbered with shirt and sarong, and came to us and fingered our camera, and we made our manners and tried to be appreciative. The best animal was a wild dog, the size of a small fox, with erect ears lined with long whitish hairs. It was reddish brown above, with white lips and underbody, and the tail was long with a well-marked black brush. My offer to purchase him was discouraged.

Two baby elephants were the hairiest I have ever seen, suggesting what infant mammoths must have looked like. The sea-eagles and cassowaries were especially fine. There remains only to mention the labels. These were eight by twelve inches, with the upper half completely filled with the legend in large letters, DRINK COCACOLA. Then TIGER in small script, in English, Malay and Chinese.

My last zoo was the smallest, newest and most generous. It occupied a single room in a disused building near the Royal Air Force flying field. Flight Lieutenant G. C. Morton had interested the fliers and their families in a Natural History Club, and they had cages and labels and all the props of a regular zoo. In addition, they possessed boiling enthusiasm which was a joy to see. The collection included a Macaque and a Slow Loris, turtles, pit vipers and four flying snakes. They generously presented two of these interesting snakes to the Zoological Society — long, slender serpents, brownish-green and mild in character. The pair ultimately arrived safely in New York and are on exhibition in the Reptile House. So, after all, Singapore has an embryo pukka zoo.

* * *

THE ZOO at Colombo, Ceylon, or Dehiwala, as it is known, is the largest and perhaps the best kept of those which I visited in the East. Like

***The Sultan of Johore ingeniously utilized sections of air-field runways to confine the exhibits in his collection. Labels were in English, Malay, Chinese — and modern advertising!***

***Markets in the larger cities of the East were full of fascinating mammals and birds. In this one merchants offered cockatoos, lories, parakeets and parrots, occasionally rare species.***

our own Zoological Park it is a considerable distance from the city, and occupies a diversified landscape of hills and dales. The architecture of the cages and enclosures is massive and oriental in character, abounding in spires, minarets and arabesque ornamentation. In some cases the inmates seemed, in comparison, incongruously small and inconspicuous, but they more than made up for this in numbers and in excellent condition and health.

The stork and adjutant aviary was surmounted by four columns of cement and upon each was a sculptured stork, lifesize and in color. For minute after minute I was lost in admiration at the exquisite detail, when suddenly one of the four spread its wings, and the others began to preen. The quartet of nearly grown storks had been reared in the zoo, and had fooled many visitors as they took motionless siestas on the capitals.

The zoo was unprovided with guide-books, owing to the low percentage of literacy among the visitors, but labels were adequate and accurate, provided with titles in English, Latin, Singhalese and Urdu.

The Director, Major A. N. Weinman, was a man mighty in physique and great in affection for his charges. A remarkable number of the host of birds and mammals recognized his step or himself as he approached. His pockets bulged with choice morsels of food, and he had a friendly greeting for tiger and civet, barbet and lory. Even cold-blooded creatures were his familiars: witness the valedictory label concerning the murder of Henry the Crocodile!

The shattered skull was put on exhibition and the tragedy reported as follows: "Henry was the best 'croc' at the Dehiwala Zoo. But visitors to the gardens did not appreciate his bigness or his magnificence as a specimen of his kind. Instead they were more concerned whether the big crocodile in the pit was asleep or awake. To satisfy their curiosity they threw large rocks at his head. Henry bore the torture stolidly but he could not keep it up for long. He died of fractures in his cranium – some of them three inches in length."

Today there is a new croc in the pit which was Henry's home for nearly a decade. And on the wall above the pit hangs Henry's skull with the legend You Killed Him! – written in red ink – By Stone Throwing. Please Spare The Others.

The Director proudly showed us a pair of great, Papuan Black Cockatoos, a flock of Spurfowl and several families of Ceylon Junglefowl. These latter breed readily, hatching four to six chicks each season. The Javanese species is lacking, owing to disturbed political conditions.

As we walked along we occasionally met a man with a shotgun, on his rounds, in case of the escape of a dangerous animal. Once Weinman whispered to an unconfined Green Barbet, whereupon it lowered its head, and in return, whispered an amazingly sweet, chattering song. In one cage, five small, iridescent kingfishers were perched in a row on a horizontal branch. They were waiting for the liberation of one small fish at a time, one after another from an ingenious water trap, whereupon first one, then the next bird dived and caught its fish. The zoo walk furnished one surprise after another.

It speaks well for elephant conservation in Ceylon that after hundreds of years of close association with Veddas, Singhalese and British these animals need thinning out to prevent their interference with man's industries and life.

Forty-five years ago in January, 1910, I had a vivid personal experience of this at first hand. I entered into the life history of this terrestrial behemoth by way of an irate mother elephant and her small calf. While I was stalking Ceylon Junglefowl in the Yala Sanctuary in the southeast part of the island I was treed by this annoyed parent. Rooted, would be perhaps a better term, for I sought sanctuary between the buttresses of a giant tree. For what seemed an eternity the great beast reached for me with her trunk tip, while her offspring squealed and frisked about. Her breath was heavy with the odor of sweet grass and my lasting memory is of a dollar-sized patch of bright green leaf plastered to the center of one of her ears. Although she kicked my gun and camera about, they took no harm, and when she finally left, I tremblingly emerged from my burrow, also all in one piece.

After nearly half a century, September, 1955, while walking along a path in the Colombo Zoo I was almost knocked over by a sudden shove. A Zoo keeper tearfully begged my pardon for his action, but pointed out the nearer of two elephants which were walking along the same path. They were roped together and the viciously swinging trunk and the expression in the bloodshot eye of the smaller elephant left no doubt of what would have happened to me if I had come within reach of his proboscis.

I found that elephants were Major Weinman's especial enthusiasm and concern. So destructive had the wild Ceylon Elephants become, destroying crops, threatening natives and injuring the Shell oil property, that the latter Company had asked for permission to shoot sixteen. The government had referred the situation to Major Weinman, head of the Zoo. Under his direction five elephants had already been captured, and the others were being rounded up. My assailant had been wild and uncaught four days before. The mahout raised his ankus and the pair of elephants – the wild and the tame – moved slowly down to the edge of the pond for their bath. The cooperation of the tame animals in aiding the capture and control of their wild fellows was, as it always is, the factor of supreme interest – tempting the use of the word intelligence.

As Major Weinman and I walked past the civet enclosure he gave a shrill blast on a whistle and almost immediately there loped into view a baby elephant. He brushed close past me and came to a stop as the Major held up a banana. At the question "What will you do for this?" the small pachyderm immediately proceeded to sit down, rear up his forelegs and curl up his trunk (never taking his eyes from the fruit). "What about this?" and at the sight of the second banana, the infant Jumbo clumsily but earnestly stood on his head and earned his reward. As he ambled off I could almost swear that he turned and winked at me, which I interpreted as "What fools we mortals be!"

As Weinman gave the little fellow a farewell pat, I realized that in this impromptu circus, performed at arm's length, I had detected in both parties nothing but kindness, enjoyment and mutual friendliness.

# News from the Conservation Foundation

### Conservation Education — How Much and What Kind?

The study by Dr. Charles E. Lively of the University of Missouri of the scope and status of conservation education in the colleges of the United States has been completed and will be published in 1956. It discloses that approximately half the colleges in the United States now give no formal conservation instruction, that the most extensive conservation training occurs in the land grant colleges and the teacher-training institutions and the least in the liberal arts colleges of the Northeast and in junior colleges throughout the nation. Dr. Lively's analyses of course content and teacher attitudes and his evaluation of current conservation education are comprehensive and unique. It is believed that this report will give tremendous impetus to conservation education.

### Request for Additional Studies of Jamaica's Population

On the basis of the preliminary reports that resulted from the Foundation's studies of population trends and resources in Jamaica, the Foundation has been urged by various private citizens and institutions in that island to continue and extend its research for another year. Preliminary financial support for such extension of research has been gained.

### Water Law Symposium

Findings already made in the continuing study of the need for changes in water laws of the eastern states and problems which will have to be met in the enactment of adequate laws to meet increasing demands for water, have led to the calling of a symposium of legislators, administrators and water users, to be held early in 1956.

### New Director — Industry Relations Has Been Appointed

Kenneth B. Anderson has joined the staff of the Foundation as Director — Industry Relations to assist the growing number of corporations now helping to support the Foundation's work to find opportunities for corporate activities which will improve conservation practice and benefit the corporations concerned.

### Graduate Schools of Conservation

Since the Foundation helped to establish the Graduate School of Conservation at Yale University five years ago as a pioneer experiment in higher education, ten universities throughout the nation have offered graduate courses leading to special degrees in this field. Many graduates of such courses subsequently go into teaching of conservation or into government employment, and it is hoped that in the ensuing year, as a result of a special Foundation study, employment opportunities in industry will accelerate.

### Adult Discussion Guides

In connection with the Conservation Radio Program to be sponsored by the Foundation and the National Broadcasting Company early in 1956, radio listeners on national hookups will be invited to request copies of a new Adult Discussion Guide being prepared to encourage public discussion of the major conservation issues of the day.

### National Research Council

President Osborn is currently participating in the work of a special committee appointed by the National Research Council to review current research work related to natural resources and to plan ways of coordinating and extending such research.

# '56 Will be a Great Year

Not just for Burgundies and Bordeaux, but for every member of the New York Zoological Society. With the new Aquarium opening in the spring, with all the new animals on their way to the Zoo, we will have more to offer our member friends than ever before. That's for sure. So give memberships in this Society for Christmas *now*. Make this present to all the animal lovers you know. Make it to yourself. Use the blank bound into this magazine.

## New Members of the New York Zoological Society

**(Between September 1 and October 31, 1955)**

*Life*

Charles Kanuk
Adolf H. Rust

*Contributing*

Mrs. Walter Bareiss
E. Farrar Bateson, Jr.
David Berk
Gerald Eisner
Mrs. Florence R. Ferguson
Edward R. Gay
W. Hunt Hall
Roy E. Jones
Mrs. Robert McKelvy
James Bishop Peabody
George O. Schneller

*Annual*

Miss Frances Arnold
Mrs. Edwin DeT. Bechtel
Frank K. Bell
Mrs. Leonard F. Bouman
David A. Brody
Mrs. Robert M. Byrne
Dr. M. L. Giampe
L. J. Grant
Mrs. Phillip Haberman, Jr.
F. Raymond Johnson
Dr. Charles E. Jurka
Mrs. Iris D. Knight
Rufus H. Knight
Dr. Lisbeth M. Kraft
Mrs. Nicholas Longworth
Morton Nelkin
Miss Elaine M. Nickelsberg
Miss Ronnie Phyllis Orden
Rev. Everett C. Parker
Miss Mary G. Potter
Harry A. Russell
Mrs. Richard Seitz
Master Stephen Zuccaro

# BEHIND THE SCENES

## NEWS AND NOTES OF THE ZOOLOGICAL PARK, THE AQUARIUM AND THE DEPARTMENT OF TROPICAL RESEARCH

### It's Officially Winter in the Zoo; the Platypuses Are Indoors

Cecil and Penelope, our Duck-billed Platypuses, were moved to winter quarters in the basement of the Lion House on October 29 to escape predicted early cold snaps. They will not be on exhibition until next spring.

It was, apparently, an easy summer for both animals, for they made slight gains in weight since last year's retirement time. Cecil weighed 3.828 pounds on October 29 of this year as against 3.608 pounds on October 27, 1954, a gain of .22 pound.

Penelope, always about half the weight of the male, was 1.848 pounds this year and 1.672 pounds on the comparable date last year, a gain of .176 pound.

The Duck-bills came to us from their native Australia on April 26, 1947. No breeding activity was noticed this past summer and we have less and less hope that the pair will reproduce.

### IN BRIEF

**Wolf, Gamma & Trinket.** Three snakes with interesting and descriptive common names have been received from India as a donation from Saul Blickman, a member of the Zoological Society. A Wolf Snake (*Lycodon aulicus*) is so called because of its large, wolf-like teeth. The Indian Gamma takes its name from its spots, which resemble the Greek letter gamma. Trinket Snakes twinkle like ornaments and are often used by Indian snake charmers to attract passers-by.

**Annie's a Father Again.** The impossibility of distinguishing between male and female penguins by their external appearance led, a good many years ago, to the mis-naming of "Annie," one of the Black-foot Penguins in the collection of the Aquarium while it was still at the Battery. Behavioral traits observed after "Annie" came to the Zoological Park in 1941 at last revealed that "she" was a male, but the feminine name has stuck and on the Bird Department's records Annie is credited as the father of the latest Black-foot chick, hatched this fall. Annie has been the male parent of most of our penguins hatched since 1944, many of them Black-foot X Humboldt hybrids.

**Winter Closings.** The Children's Zoo closed for the winter on November 13 with an attendance of 311,378, making a grand total of 4,372,074 children and adults who have entered to play with its young animals since the opening on May 21, 1941. The Farm-in-the-Zoo closed for the season on the same day, having had 90,686 visitors, a substantial increase over last year.

**Hedgehog Record.** Insectivores, generally speaking, have rather short lives and European Hedgehogs at the age of three years are well along in years. On October 7 we lost a hedgehog that had come to us on October 29, 1951; it established what appears to be a new longevity record for the species, of three years, eleven months and eight days – more than six months longer than the best previous record we can find.

**An Onager Again.** On November 14 we received through the interest of Bronson M. Potter, the second Onager (*Equus hemionus onager*) we have ever exhibited. Our first specimen, a female, was brought from Europe by Mr. Crandall in 1920 and lived here until 1937, producing during that time two foals by cross-breeding with our male Kiang. The offspring were called Kianagers. The new Onager is a six-months'-old male and is spending the winter in the Zebra House.

**Surprise Elk.** Elk calves are normally born in the Zoological Park in May, June or July, but on rare occasions they come considerably later. One was born on November 3 this year; the latest elk birth in our records is November 6.

## PUBLICATIONS OF INTEREST

THE NATURAL HISTORY OF NORTH AMERICAN AMPHIBIANS AND REPTILES. By James A. Oliver. ix + 359 pp, 12 plates and 74 figures. D. Van Nostrand Co., Inc., New York, 1955. $6.95.

In one sense this is a book for those whose time is limited but whose interests are not. An enormous amount of literature has been not only summarized but synthesized. Isolated facts concerning individual species are of intrinsic interest, but here they have been given additional meaning by virtue of their being fitted into a general picture.

During recent years a number of excellent handbooks covering the individual groups of amphibians and reptiles in the United States have become available. These were designed primarily for the identification of species and subspecies, usually with a few bits of information concerning the natural history of each. The better handbooks included summaries of general information, but on the whole their purpose was to answer the question, "What animal do I have?"

Assuming that you've obtained the answer to that question (or even if you haven't) you may be astonished to find that it is vastly more interesting to learn some of the amazing things that the common salamander, frog, turtle, alligator, lizard or snake is capable of doing. Often Dr. Oliver can tell you how these things are done, although there are, to be sure, many questions that remain to be answered. By comparing species, however, it is often possible to gain some insight concerning the forces of natural selection that have led to the diversities of structure and behavior encountered in any one group of animals. This approach has been successfully employed, augmented by 15 tables and many excellent figures that summarize facts discussed in the text.

The book is written in simple style with a minimum of technical terms, all of which are defined in a glossary. The amateur naturalist will find answers to most of his questions, but over and above that he will be stimulated by the discovery that replies can be found for questions that he never thought of raising. Herpetologists will be delighted to find the useful tabulations and they will be grateful to Dr. Oliver for his instructive summaries of widely scattered information. They may lament the absence of citations and a bibliography although 11 handbooks and check lists are listed as references, and authorities are frequently cited in the text. The binder or printer was not particularly judicious in the insertion of the plates, one of which separates a figure from its caption.

But these are minor complaints. This is an uncommonly sensible book, well planned, well executed, readable, stimulating, and last but not least, with a complete and usable index. — CHARLES M. BOGERT.

NAT FEIN'S ANIMALS. Sixty photographs by Nat Fein, with text as told to Ferdi Backer and Ruth Biemiller. 96 pp. Gilbert Press, Inc., New York, 1955. $3.50.

The Introduction to this book says Nat Fein is crazy. Sure he's crazy — like *Vulpes fulva*. This *Herald Tribune* photographer comes up to the Bronx Zoo quite often. You can hear him coming, from a long way off. He sheds picture ideas as a moulting chicken sheds feathers. He then selects, unerringly, the most preposterous, grotesque and revolting of these ideas and announces that he and his Picture Desk will be satisfied with nothing less than the Full Treatment on all of them. After a while he goes away, and in next morning's *Herald Trib.* you see the lower half of page one given over to a photograph that *compels* your attention because it reveals in stark simplicity some endearing or story-telling trait of animals. Down at the lower right it says in small type:

Herald Tribune photo by Nat Fein

Nearly a third of the photographs in this book were made in the Bronx Zoo. Others were made at pet shows, around town, just here and there when the fancy struck this ingenious and imaginative photographer. The text must have been taken down on a tape recorder; Nat's stories of how and why he made each picture are as true to life, and as true to Nat Fein, as his pictures. — W. BRIDGES

# INDEX

Figures in **black type** indicate that the reference is to, or includes, an illustration, map or design.


A

*Acinonyx jubatus*, 134
*Actinopyga agasizii*, 160
*Afropavo congensis*, photos sent to Congo, **91**
*Ailuroedus buccoides*, 37
  *crassirostris*, 37
*Alouatta palliata*, 104, **106-108**
  *palliata aequatorialis*, **105**
  *seniculus*, 105
*Amblyornis inoratus*, 36
  *macgregorii*, 36
  *subalaris*, 36
Angler fish, **102**
Anteater, Giant, **100, 114**
Aquarium, new, under construction, **137, 138**
*Archboldia papuensis*, 36
Armadillo, Nine-banded, **82, 84-87**
Armstrong, Edward A., "The Adaptable Wren," 21
Aspen, barked by elk, **173**
Atz, James W., "The Fish with Holes in Its Head," 77
Axelrod, Herbert R., donates fish, 50

B

Baboon, Guinea, and baby, **180**
Baby animals, born in Zoo, 63
Bear, Black, cubs born, 62
  family group, **Cover No. 3**
  female and cubs, **80, 81**
Beaver lodge, in Jackson Hole, **172**
Beebe, William, "A Summer in Asia," 89
  feeding macaque, **183**
  in Johore Zoo, **184**
  "Newsletter from Karachi," 135
  "Zoo-goer in Asia," 182
Bergen, Stephen W., "All on the Theme of Conservation," 18
Bird of Paradise, Ribbon-tailed, **144**
Birds, population of, 72
Blancou, Lucien, "The Lowland Gorilla," 162
Blochman, Lawrence G., translator, 162
Boa, Annulated, **66**

"Book of Beasts," 95
Books reviewed:
"Amphibians and Reptiles of Western North America," 63
"Aspects of Deep Sea Biology," 94
"Attracting Birds to Your Backyard," 94
"Bafut Beagles," 128
"Beast that Walks like Man," 160
"Bird Houses," 160
"Development of Color in Budgerigars," 94
"Dinosaurs," 94
"Doctor Jimek I Presume," 160
"Evolution of the Vertebrates," 128
"Greenhead," 160
"Marlin Perkins' Zooparade," 64
"My Zoo Family," 31
"Nat Fein's Animals," 190
"Natural History of North American Reptiles and Amphibians," 190
"Odyssey of an Animal Collector," 128
"Pet Hamsters," 160
"Prehistoric Animals," 94
"Saga of the Grey Seal," 128
"Stray Feathers from a Bird Man's Desk," 128
"Tigers of Trengganu," 32
"Vulcan, the Story of a Bald Eagle," 160
"Waterfowl of the World," 64
"World Outside My Door," 160
"Zoo Pets," 160
*Bos gaurus,* 2, **3, 10, 11**
*Bothrops schlegeli,* 69, **71**
Bower-bird, Brown Gardener, **40**
Fawn-breasted, **38**
Golden-crested Black, 36
Golden Queensland Gardener, 36, **41**
Great Gray, 34, **39**
habitat of, **42**
Satin, 35, **39**
Spotted, 34
Stagemaker, **43**
types of bower, **36, 37**
Yellow-breasted, **34, 35**
Bridges, William, "The Cheetah – the Mildest Cat," 130
Buchanan, G. Dale, "Nine-banded Armadillo – Invader from the South," 82
Burr, Andrew, Jr., 123
Bylot Island, expedition to, 56

**C**

Callimico, feeding habits of, 91
new arrival, **15,** 29
second specimen, 63
*Callimico goeldii,* 29, 91
Cameron, Dr. T. W. M., presents Gray Seal, 29
"Candy," Asiatic Elephant, **140**
Carlisle, Donald T., "The Fable of the Sloth and the Cheetah," 139
"Spring Comes Along – Eventually," 47
Carr, Archie, "The Riddle of the Ridley," 146
Carson, Rachel, Gold medal recipient in 1953, 1
Catbird, Green, 37
Tooth-billed, 37
White-throated, 37
Chapin, Dr. James P., requests photographs, 91
Cheetah, **Cover No. 5, 131, 133**
pair received, 128
speed of, 131
Children's Zoo, attendance in 1955, 189
Chimpanzee, Black-faced, record weight, 127
new "Little Women," 93
Chipmunk, in winter sleep, **172**
*Chlamydera cervinoventris,* **38**
*lauterbachi,* 36
*maculata,* 34
*nuchalis,* 34
*Chlamydosaurus kingi,* **44-46**
Coates, Christopher W., "How's the New Aquarium Coming Along?" 137
Cobra, King, hand-feeding young, 159
handling technique, 93
hatching, **111**
incubation of, 92
Colombo, Zoo in, 184
Congo, fishes from, 127
Congo Peacock, photos sent to Congo, **91**
Conservation Foundation, books published by, 18, **19**
Adult Discussion Guides, 187
American Watershed Conference, 28
Arid Lands Conference, 90
Bighorn Sheep project, 62
Book on Jamaican population, 125
Booklet on Foundation, 28
Conservation achievement survey, 62
Conservation education study, 187
Conservation job survey, 61
Director – Industry Relations, 187
Dr. Graham abroad, 157
Eastern water law, 62
Education survey completed, 157
Fifty Years of Forestry, 62
Flood control study, 90
Geographical Conference, 28
Graduate Schools of Conservation, 187
Jamaican demography reviewed, 28
Jamaican studies, 157
additional study requested, 187
Junior Conservation Series films, 29
National Research Council, 187
Nicholson, Dr. Max, 125
Osborn, Dr., articles by, 125
Osborn-Davis paper, 28
Pan American Conference, 125
Radio program with NBC, 125, 157
Snider on editorial board, 29
Teachers' Handbook, 157
Television program, 157
Water Law study, 90
survey, 125
symposium, 187
Wenner-Gren Foundation Conference, 28, 125
Constrictor, Boa, gift, **68**
Crandall, Lee S., Bower-bird observations, 39
Crane, White-necked, injury to, **30, 31**
*Ctenosaura similis,* **69**
Cully, William T. A., letter from, 94

**D**

Deer, Sambar, in Malayan salt-lick, **6**
relations with Seladang, 6
*Dipsas variegata nicholsi,* 70, **71**
Dunton, Sam, Fellow of B.P.A., 159
Zoo Pictures by, **15, 48, 49, 80, 81, 110-115, 140-145, 176-181**

**E**

Eagle, Golden, "Mr. Ramshaw," 93
Elephant, Asiatic, "Candy," **140**
relations with Seladang, 8
Elk, Jackson Hole, **Cover No. 1**
late birth, 189
Roosevelt, presented to Zoo, **143**

**F**

Farm-in-Zoo, attendance in 1955, 189
" 'Fifty-six Will Be a Great Year," 188
Food, animal, in winter, 170
of animals, 98
Frog, Giant, of Cameroons, **143**
Frogmouth, Tawny, new arrival, **15**

**G**

Gayal, and calf, **180**
Gazelle, Arabian, **145**
Gecko, Tokay, **25-27**
Gifts, reptile, 66
Giraffe, Masai, new arrival, **16**
Gorbman, Dr. Aubrey, elected Fellow, 29
Gordon, Myron, "Lake Petén Mollies Again," 13
"Those Puzzling Little Toms," 50
Gorilla, Lowland, life in wild, 162, **164, 165**
"Makoko," **162**
Mountain, **48, 168, 169**
"Oka," **Cover No. 4, 112, 113**
Grant, DeForest, presents Roosevelt Elk, 143
*Gyrinocheilus aymonieri,* **78, 79**

**H**

Hamilton, Jr., William J., "Nature Spreads a Varied Table," 98
"Where Do Animals Go in Winter-time?" 170

Hatchet Fish, Silver, new arrival, **17**
Head-breather, Siamese, 77, **78, 79**
Hedgehog, longevity, 189
Heron, Nankeen Night, hatches egg, 159
Hibernation, 170
Holothurin, analysis of, 93
Howler, Black, 104, **106-108**
Mantled, **105**
Red, 105
Hummingbird, Violet-eared, **76**

**I**

Iguana, Spiny-tailed, gift, **69**

**J**

Jakowska, Dr. Sophie, elected Fellow, 29
"Jimmy," Chimpanzee, record weight, 127
Jungle Fowl, relations with Seladang, 8

**K**

King Snake, Tropical, 69
Kingfisher, Amazon, **75**
Knight, Capt. C. W. R., 93

**L**

*Lampropeltis doliata polyzona,* 69
Langaha, given to Zoo, **142**
*Lepidochelys kempi,* 148
*Leptodeira annulata,* **68**
*Leptophis ahaetulla occidentalis,* 68, **70**
Lester, Henry M., appointed Photographic Consultant, 29
"How We Photographed a Rattlesnake's Strike," 116
Levine, Mildred, memorial tree, 93
Litter posters, attract attention, 63
Lizard, "Flying," **141**
Frilled, **Cover No. 2, 44-46**
Lorenz, Konrad Z., gold medal recipient in 1955, 1

**M**

Manville, Dr. Richard H., new Curator of Mammals, **158**
Market, bird, in Asia, **185**
"Marmoset," Goeldi's, feeding habits, 91
new arrival, 29
second specimen, 63
Marshall, A. J., "The Bower-birds," 34
Martini, Helen, feeding deer, **145**
McCrane, Marion, talks at schools, 128
McClung, Robert M., note on Callimico, 29
Miller, Richard S., & Katharine Scherman, "Creatures of Sea Ice and Tundra Barren," 56
Mollie, Lake Petén, **13**
*Mollienisia petenensis,* **13**
Monitor, Komodo, **111**
warding off, **181**
Monkey, Howler, 104
Red Spider, **108**
Mouse, Field, exposed nest, **175**
Jumping, **174**
"Mr. Ramshaw," boards in Zoo, 93

**N**

New Haven train, to Zoo, **92**
Night Snake, Spotted, gift, **68**
Nightingale-thrush, Russet-capped, **72, 73**

**O**

Ogilvie, Charles S., "Malayan Seladang," 2
Oliver, James A., "Banana Bonanza," 66
"Big Bluff from Australia," 44
"Gecko, the Chirping Reptile," 25
Onager, new arrival, 189
Opossum, Mouse, **142**
Orang-utan, "Andy," **176-178**
Osborn, Fairfield, editorial:
"The Gold Medal," 1
"Trustees for Animals," 33
"The Magnetism of Animals," 65
"Jubilee Days at the Zoological Park," 97
"Animal Personalities," 129
"Livingroom for Animals," 161
Fellow of AAAS, 158
Member, Institut des Parcs Nationaux du Congo Belge, 62
receives honorary degree, 126
Otter, Giant, new arrival, **49**

**P**

Palm Viper, Eyelash, 69, **71**
Horned, 69, **71**
Panda, Giant, **101**
Parking, fee raised, 93
Penguin, Emperor, **115**
"Annie," father again, 189
diving, **141**
King, **115**
egg cracked, **145**
*Phoca hispida,* **58, 59**
Pig, wild, **8**
relations with Seladang, 7
Platypus, Duck-billed, age of, 94
weights of, 189
Potter, Bronson M., captures Onager, 189
Potto, Congo, **115**
baby, **49**
*Prionodura newtoniana,* 36
*Ptilonorhynchus violaceus,* 35
Puff Adder, African, newborn, **63**

**Q**

Question House, questions asked at, 126

**R**

Rail, Ruddy, **74**
Rat Snake, Tiger, 68
Rattlesnake, Western Diamondback, "Herman," **116, 120-121**
Regent-bird, 37
Reptile Club, formed, 158
letter about, 126
Reptile gifts, from banana piers, 66
Rhinoceros, African Black, **110**
Rieman, Terry, book by, 31

**S**

Saki Monkey, Red-backed, **17**
*Scenopoeetes dentirostris,* 37
Scherman, Katharine, & Richard S. Miller, "Creatures of Sea Ice and Tundra Barren," 56
Scott, George, feeds birds, **127**
Sea-Cucumber, Holothurin from, 160
Sea Lion, Steller's, introduced in pool, 93
Seal, Gray, new arrival, 29, **49**
Ringed, **58, 59**
Seladang, Malayan, 2, **3, 10, 11**
*Sericulus chrysocephalus,* 38
Singapore, Dr. Beebe visits, 182
Skutch, Alexander F., "How Birds Handle Their Population Problem," 72
Snail-eating Snake, 70, **71**
Southwick, Charles H., "The Black Howlers of Barro Colorado," 104
*Spilotes pullatus,* 68
Spoonbill, Roseate, **101**
Subway, car card on Farm, **159**
cards about Zoo, **93**

**T**

Tee-Van, John, receives honorary degree, 126
Tiger, "Rajpur," **Cover No. 6**
*Tomeurus gracilis,* **50, 51, 54**
Tree Snake, Green, 68, **70**
Turtle, Atlantic Green, **151**
Hawksbill, **151**
Leatherback, **151**
Loggerhead, **151**
Ridley, **147, 151**
Pacific, laying, **152, 153**

**U**

United Nations, visits Zoo, 94

**V**

"Vamp Till Ready," book mentions Zoo, 31
*Varanus komodoensis,* **111, 181**
Viper, South African Horned, **16, 17**
Vulture, Ruppell's, longevity, 159

**W**

Walcott, Frederic C., gold medal recipient in 1946, 1
Water Deer, Chinese, **144**
Wren, European, **21**
Shetland, **23**
haunt of, **22**
Winter, **21**

**Y**

Yerkes, Robert M., gold medal recipient in 1954, 1

**Z**

Zebra, hybrid, new arrival, **179**
Zoo, praised in letter, 159
Zoo Parties, increasing, 94
Zoo Train, New Haven R.R., 63, **92**